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EPA focuses on chronic health risks, community's emergency-response plans

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were reported to the state by companies in the five counties since 1980.

• Regulations allow a hodgepodge of safeguards — sometimes differing for the same chemical at two units of the same plant — but company and government officials say a catastrophic release is unlikely because of the chemical industry's good safety record.

• An EPA-commissioned study last year compiled a partial listing of toxic chemical accidents since 1980 in selected areas, including Texas. There were at least 6,928 such accidents that killed 130 people and injured 1,478.

To prepare for immediately dangerous leaks, EPA has developed a significant new program to give state and local officials guidance, EPA Administrator Lee Thomas said. But critics say it does nothing to require industry to prevent accidents.

Thomas

To combat cancer and other chronic risks, EPA is boosting its effort to set regulations for more chemicals than the very limited number with controls so far, Thomas said. But critics say EPA's regulation-setting process weakens protection of public health. And state officials in Texas and elsewhere doubt they can handle new duties required by the EPA plan.

The debate is complicated because government agencies know relatively little about toxic air pollution — specific chemicals released, volumes and long-term hazards.

All air pollutants are "toxic" by definition, but that term is widely used to designate substances that may pose immediate or chronic risks — sometimes both — even at very low levels. They include chemicals like methyl isocyanate, chlorine, benzene, vinyl chloride, phosgene and hundreds of others.

The "toxic" name also distinguishes these substances from six more common air pollutants that Congress specifically ordered EPA to attack because they are found widely throughout the country — ozone, carbon monoxide, airborne particulates, sulfur dioxide, nitrogen dioxide and lead.

One indicator of the magnitude of toxic releases in this area is the Texas Air Control Board's recent estimate that industries in the five industrial counties around Houston annually release 666 million pounds of chemicals in the broad group of "volatile organic compounds." These "VOCs" number in the thousands and include many of the substances commonly called "toxic" and many suspected cancer causers.

"I can't conceive of a place with a lot of VOC emissions that doesn't have a lot of the VOCs that cause cancer," said Bern Steigerwald, an EPA air official.

Industry has been required to reduce emissions of volatile organic compounds, as a group, because some of them help form ozone, which is one of the six priority pollutants and an ingredient of smog.

But research about most of these organic chemicals is too limited for scientists to add them either to the relatively short list of those that may cause cancer or to the longer list of those without that ability. A National Academy of Sciences committee said in 1984 no research had been done on the long-term risks of 70 percent of the 60,000 to 70,000 chemicals Americans are exposed to. Another 14 percent had been studied somewhat, but not enough to estimate risks.

Last year, the House Health and Environment Subcommittee said it was making the broadest effort ever to find out about releases of individual toxic chemicals. The panel asked 86 large chemical companies what amounts they release, if any, of specified substances and others with similar hazards. Twenty-nine companies in the five Houston-area counties responded to the inquiry.

An analysis of the responses shows plants in those counties released — or had permits to release — about 10 million pounds of 45 of these chemicals in 1984. More than 2.5 million pounds were chemicals known or suspected to cause cancer. Almost 6 million pounds were chemicals that EPA says can kill or injure if a large enough amount escapes into the air.

The Texas Air Control Board says about 350 companies (and a few government agencies) with 491 facilities in those counties have permits to release volatile organic compounds.

Toxic releases here were compared with those in other areas in an EPA study in 1984. The study summarized what was known about sources and amounts of 86 potentially toxic air pollutants. They were mainly estimated from production figures, because EPA's data base about the actual volumes released is poor.

Virtually all of about half of these 86 substances enter the air from organic chemical plants, the study said, and the most striking aspect of their location was the large concentration between Corpus Christi and New Orleans. Eighteen of the chemicals were made entirely in Texas and Louisiana, with more than half the production of another 47 in the two states.

It appears that the Texas-Louisiana and the Philadelphia-New Jersey areas, where chemical plants are also concentrated, have the nation's largest totals of industrial releases of toxic chemicals to the air, Steigerwald said.

In the past six years, the 12,000 reports to Texas officials that described unintended releases — actual and potential — involved immediately dangerous toxic chemicals, others that may pose long-term risks and some fitting both categories, as well as other kinds of pollutants.

State officials say the reports as a group are as significant for what they omit as for what they tell. In many cases, companies left out the identity of pollutants released, the amount, or both. Texas and Houston-area environmental officials also say some accidental releases are never reported, but that a catastrophic release is a remote possibility.

Jim Myers, TACB's enforcement chief, said federal work-place safety regulations and an aggressive effort by companies make the chance of a disastrous release a smaller concern for Texans than the possible long-term harm of routine releases.

Jon Fisher, research director for the Texas Chemical Council, said safety efforts are evident in the industry's low injury rate. The injury record of Texas chemical plants is five times better than the chemical industry's in the United States, he said, and 10 times better than that of all American manufacturers.

Industry generally adopts safety procedures voluntarily, said Lewis Crampton, executive director of the National Institute for Chemical Studies in Charleston, W. Va. "The chemical industry is highly regulated except in one area, actual production. Products are regulated, but the production process itself is not overly regulated," he said. "There are no real standards for process safety."

Some Texas and Houston-area officials gave a lukewarm reception last fall to EPA's new plan to help them prepare for disastrous toxic releases, saying they were probably already doing most of what it recommends.

Thomas said the program will increase awareness about highly toxic chemicals and preparedness for accidents. It is not a criticism of state and local officials, he said, but showed that we, EPA, didn't feel we were adequately responding to the potential threat and we did have a responsibility in that area.

"It also reflected that the primary responsibility for responding to any kind of emergency as well as developing the plans was a state and local responsibility, but we had a significant role in providing technical information and technical support."

Along with advice for preparedness, EPA provided profiles of 402 chemicals that can kill or injure in an air release.

Bill Gulledge, associate environmental director of the Chemical Manufacturers Association, said EPA's effort will complement CMA's similar Community Awareness and Emergency Response program, developed and introduced after the Bhopal accident.

Critics of EPA's acute hazards plan, however, say it should formally require efforts to prevent catastrophic releases.

David Doniger, senior attorney for the Natural Resources Defense Council, said the list of 402 chemicals is useful, but should also include substances posing only long-term risks. EPA's reliance on state and local governments is worrisome, he said, because they often hesitate to seem "too pushy" with major corporations, so their area will not get a reputation of having "a bad business climate."

Thomas said EPA's plan for immediately dangerous releases will produce "a lot of public awareness, a lot of public pressure, a lot of regulatory pressure on the plant manager" to avoid accidents, which will prompt a continuing review of production processes and also reduce routine releases.

Doniger said procedure changes are essential, but so is abandonment of "the 19th century plumbing the chemical industry now uses."

There is no "bright line," dividing steps to prevent accidental and routine releases, he said. "The first thing you have to do, is adopt an ethic or approach that the objective is to stop using the air as a hazardous waste dump and to make these processes totally closed."

Gulledge, of the Chemical Manufacturers Association, said, however, that although the industry strives to reduce releases, "zero emissions are just not possible." Chemical plants, he said, "have to emit things to the air" in some circumstances.

"Cost has something to do with it," he said. "You could cut down, but spend an absolute fortune on it." The technology is not available to stop all routine releases, he said. And chemical processes are "designed for emissions at permitted safe levels."

Just how those "safe levels" are determined is at the heart of the complex debate over EPA's plan to improve control of routine releases.

The Clean Air Act amendments of 1970 specified five priority pollutants was dangerous, but an intense counterattack by industry prompted the agency to start the detailed process of deciding just how dangerous each one is and how many people are threatened. This was done to fend off lawsuits, the U.S. General Accounting Office said in 1983.

Myers said EPA has "gone along at a snail's pace" because industry "has fought tooth and claw to roadblock that program."

Gulledge, spokesman for the chemical industry, said it "obviously will participate in the regulatory process and comment."

Whatever the reasons, Thomas said he is now speeding up and enlarging the program. That strategy is based largely on a controversial EPA study that looked at 40 chemicals and arrived at the rough estimate that they cause 1,300 to 1,700 cancer cases yearly in outdoor air in the United States.

Small sources of pollutants, such as the fumes from pumps at gasoline stations, cause most of those cancers, because they are more widespread than big industrial sources, such as chemical plants and refineries, the study said.

Some people downplay the significance of health risks from industrial releases, citing that finding and another EPA study that said most people are exposed to higher levels of toxic chemicals in indoor air than outside, even living near chemical plants.

Jim Price, research director of the Texas Air Control Board, said advocates of tighter industrial controls are often "haggling and quibbling," because the EPA study said more pollutants come from small sources.

But Steigerwald, an author of the study, said large chemical plants pose much greater hazards for people nearby. "I'd personally be more concerned about being in an area of high individual risk" than about living near one of the small sources, he said.

Some critics say EPA is using the study to back away from industrial controls, but Gulledge said the finding of higher risks around chemical plants suggests otherwise.

Thomas said EPA will give more attention to regulating small sources than in the past, but not at the expense of industrial controls. It is allocating more funds to set four times as many regulations per year than were imposed on industrial pollutants in the past, he said.

Speeding up the program also involves "referring" some chemicals to the states that EPA determines come from only a few industrial sources and do not warrant the expense and effort to set a federal regulation, he said.

To help the states set regulations, he said, EPA will provide increased funding and its own extensive technical resources to help determine risks and what controls are needed.

Despite such promises, the "state-referral program" has proven highly controversial. Critics fear that states lack the resources to handle the complex task and may impose lax regulations, if any, to keep from driving away industry.

Texas regulations now involve three tiers of controls. "Reasonably available" technology is required for all sources of volatile organic compounds. "Best available" technology — a step up in control — must be in place on new and modified air pollution sources. Even tighter controls are required for

THE AIR WE BREATHE

Today

Millions of pounds of toxic chemicals still flow into the air annually from industries on the upper Texas coast. The Environmental Protection Agency's plans to prevent long-term health problems and prepare for accidental leaks are both controversial.

Monday

West Virginia's Kanawha Valley — the "Chemical Valley" — has come face to face with the threat of toxic air pollution like no other American community. Residents are divided — can they have jobs and safety?

Tuesday

Officials say most chemicals that can kill or injure in accidents are found in the Houston area. One of the deadliest has leaked several times in recent years, sometimes floating beyond plant boundaries. Companies are taking extra precautions.

Wednesday

Uncertainties surround the debate over toxic chemicals' long-term risks. Routine releases usually translate into tiny or undetectable levels in the air. What risks do they pose? Scientists are only starting to put the puzzle together.

Thursday

EPA officials say they must concentrate on the toxic air pollutants with the biggest long-term risks. Critics say that may leave some pollutants unregulated and some Texas residents unprotected. Is it acceptable for some people to face pollution risks involuntarily?

Ronald L. Goins / Chronicle

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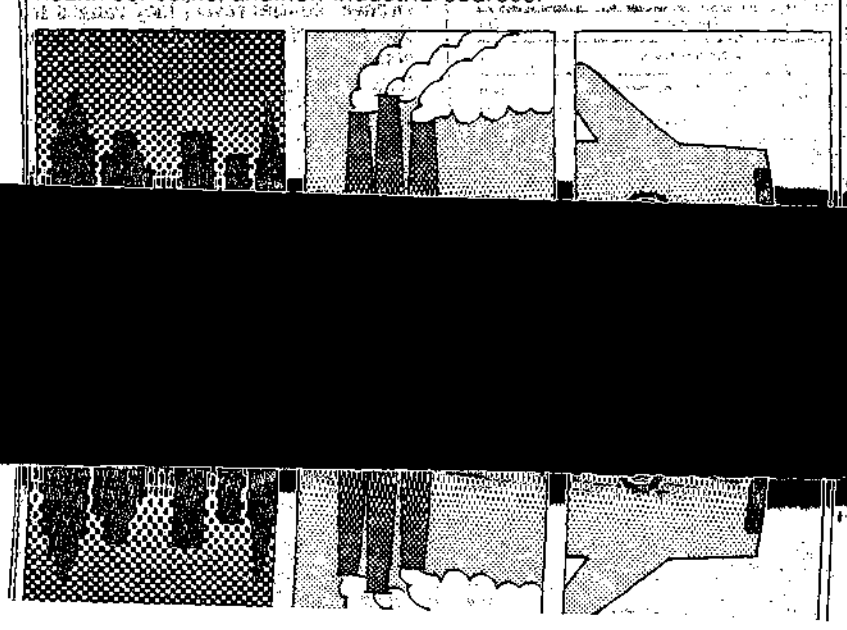
COMMON AIR POLLUTANTS

Federal regulations for six major air pollutants found widely around the country are separate from regulations for "toxic" or "hazardous" pollutants. The six major pollutants; estimated annual industrial releases in Harris, Galveston, Brazoria, Jefferson, Orange counties; health concerns; and non-industrial sources:



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Just how those "safe levels" are determined is at the heart of the complex debate over EPA's plan to improve control of routine releases.

The Clean Air Act amendments of 1970 specified five priority pollutants for reduction around the country, and Congress added a sixth — lead — to that list in 1978.

Congress also told the new EPA 16 years ago to regulate other air pollutants — called "hazardous" in the act, but also known as "toxic" — that increase death or injury. To date, EPA has set regulations for six — mercury, beryllium, asbestos, vinyl chloride, benzene and radionuclides — but environmentalists say all major sources are not covered and the controls that were required were not as good as some companies already used.

EPA officials concede the program has moved too slowly.

Doniger and other critics in the environmental movement and Congress say EPA overcomplicated that process — and weakened its protection against cancer and other ailments — when it started asking if pollution controls were technically feasible and comparing their costs with the monetary value of the lives they would save.

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Despite such promises, the "state referral program" has proven highly controversial. Critics fear that states lack the resources to handle the complex task and may impose lax regulations, if any, to keep from driving away industry.

Texas regulations now involve three tiers of controls. "Reasonably available" technology is required for all sources of volatile organic compounds. "Best available" technology — a step up in control — must be in place on new and modified air pollution sources. Even tighter controls are required for specific toxic chemicals with federal regulations.

State officials doubt they have the resources to set regulations for individual chemicals. "We would be imprudent to say we could do it all," said Eli Bell, who becomes executive director of the Air Control Board in March.

"I think we feel strongly about the control of toxics. We will look for every way we can to shift resources into that area, but there's a lot of other work we have to do in response to the (1985) amendments to the Texas Clean Air Act. Given the list I've seen (of chemicals likely to be referred to Texas), we'd be hard pressed to get it all done."

Other TACB officials were more blunt. Myers said EPA seems to be saying their record "looks awful" and "they're going to try to get money to give us to let us do it. They're kind of passing the hot potato down."

Next: Jobs vs. safety: A West Virginia community comes face to face with the divisive specter of toxic air pollution.

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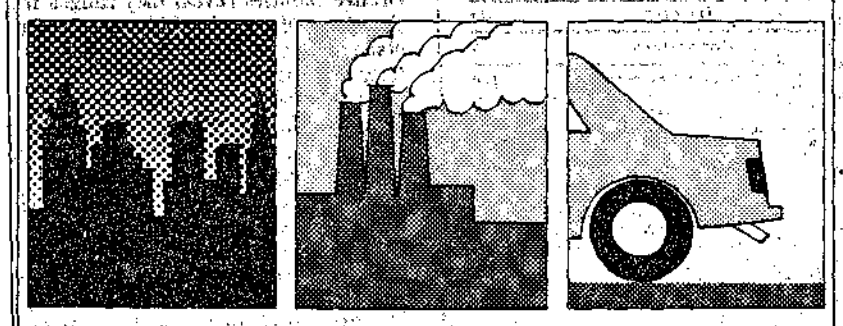


Ozone — Volatile organic compounds (666 million pounds) and nitrogen oxides (1 billion pounds) help form ozone, major ingredient of smog. Respiratory problems, eye irritation, reduced resistance to infection. Automobiles also emit VOCs, nitrogen oxides.

Nitrogen dioxide — The nitrogen oxides total is mainly nitrogen dioxide, but includes some nitrogen oxide. Respiratory illness, lung damage.

Airborne particulates — 108 million pounds (a combination including dust, fly ash, metals, smoke, mist). Eye and throat irritation, bronchitis, lung damage. Automobiles are another source.

Carbon monoxide — 1.1 billion pounds. Impaired ability of blood to carry oxygen; cardiovascular, nerve, pulmonary problems. Automobiles are another source.

Sulfur dioxide — 651 million pounds. Respiratory problems, permanent lung damage.

Lead — 108,000 pounds. Retardation and brain damage, especially in children. Automobiles using leaded gasoline are another source.

Sources: Environmental Protection Agency, Texas Air Control Board.

Ronald L. Goins / Chronicle

THE AIR WE BREATHE

Firms describe toxic releases to subcommittee of House

By BILL DAWSON
Houston Chronicle

WASHINGTON — The best inventory of toxic chemicals that Houston-area industries discharge to the air may be crammed into a House subcommittee's filing cabinets, not stored in the computers of the Environmental Protection Agency or the Texas Air Control Board.

EPA concedes its data base is poor, with no continuing, comprehensive effort to collect that information.

Despite requests by Texas officials that companies report how much they release of specific toxic substances, the state's statistics are still largely confined to a broad group of pollutants that includes many toxic chemicals, but others that are less hazardous, too.

When Rep. Henry Waxman, D-Calif., wrote 86 chemical companies last year to ask what amounts of specific toxic substances they release to the air, the Health and Environment Subcommittee that he chairs said no government agency had tried to gather the information before.

Twenty-nine companies with plants in Harris, Galveston, Brazoria, Orange and Jefferson counties responded. In 1984, they released or had permits to release about 10 million pounds of 45 of the chemicals Waxman asked about.

Releases of 16 known or suspected cancer-causing agents totaled more than 2.5 million pounds — from 553 tons of benzene to less than 200 pounds of trichloroethylene.

The total included about 6 million pounds of 22 substances EPA says can be immediately dangerous in a big enough accident — releases ranging from 1,960 tons of ammonia to about two pounds of hydrogen sulfide.

Some releases were chemicals fitting both categories. They included 206 tons of acrylonitrile, more than 83 tons of chloroform and more than 10 tons of formaldehyde.

Fifteen companies gave totals for all releases, routine and accidental. Eight gave partial information, including five that told only about accidents. Six provided no information on amounts released. Some companies extensively described safety and health surveys and control equipment. Others did not.

The inquiry was part of an investigation of chemical industry practices after methyl isocyanate gas leaked from a Union Carbide plant in Bhopal, India, killing more than 2,000 persons. Waxman wanted to know about releases of that chemical and 18 others Union Carbide considers "extremely hazardous," any others with similar dangers, and 37 substances EPA was considering for regulations because of possible hazards from breathing them over long periods.

What the panel received, said one staff member, was "very sketchy information. We never pretended to have anything comprehensive. But the picture we do have is very alarming. It's only the tip of the iceberg."

Bill Becker, who heads the national organizations of state and local air pollution directors, said the companies' responses to the committee show "we just don't have the information in hand, from a national perspective, to confidently proclaim what's being emitted."

Bern Steigerwald, an EPA air official, acknowledged the agency needs to learn more about industry's toxic air releases, but said getting data like Waxman's is only "one small part" of defining the problem. "You can blow a lot of money putting samplers out," he said.

The subcommittee staff member said some companies' "haphazard response" indicates "the haphazard care given to these chemicals by the chemical industry. If they give erroneous or incomplete information, it implies they don't know themselves about what they're putting into the air."

Several companies with plants in this area told the panel they could not provide information about releases of specific chemicals, because neither EPA nor Texas officials had ever asked for it.

Union Carbide, for example, disclosed volumes of individual chemicals released by its West Virginia plants because that state had required the information, but not the releases at its Texas City facility. Uniroyal said monitoring and measuring releases of all individual chemicals would be "impractical, if not impossible." Amoco said information about releases of specific chemicals was "seldom of interest."

Critics of EPA's progress in controlling specific substances contend one problem is that release data are generally not collected for unregulated chemicals, and the resulting lack of information has slowed the setting of regulations.

Nonetheless, the companies insisted their handling of toxic chemicals is far from haphazard and represents a steady commitment to the wellbeing of plant workers and the public around the plants. Several said toxic chemicals measured in the air just outside plants are far below levels the federal government allows workers to breathe.

A Monsanto Co. executive told the panel the "raw data" his company provided indicate nothing but the amounts of substances that are released.

"Understanding how these data may relate to potential human exposures and associated health risks, if any, is quite another matter, requiring a completely different kind of scientific evaluation. Our scientists and our expert consultants follow this issue closely and, based on everything we've seen, we are convinced that the air emissions from our operations pose no health problems for our employees or the citizens in our plant communities."

Dow Chemical Co. urged that "a clear distinction" be made between long-term health risks of "normal" releases from vents in a chemical process and immediate dangers of an accidental leak of a highly toxic material. "The appropriate control strategy for acute risks will often be markedly different than the appropriate control strategy for chronic risks."

Shell Chemical Co. was typical in its description of extensive controls including incinerators, scrubbers to neutralize chemicals, seals for pumps and compressors, and flares to burn gases from vents. Relief valves make non-routine releases "to ensure worker safety and protect equipment from explosions and fires," the company said.

Celanese Corp. said failures in safety systems would "normally" be detected. That company, among others, downplayed the likelihood of a Bhopal-type disaster in this country. An internal Celanese memorandum explained its safeguards to prevent a "worst-case" accident.

"Wind directions, in most cases, happen to blow only a small percentage of the time in those directions where communities could become involved," the memo said. "The incident at Bhopal, however, has taught us that Murphy's Law governs and those worst cases have been presented."

Erratic reports of toxic leaks hamper air-control efforts

A toxic mixture of gases spewed from an agricultural chemicals plant near Greens Bayou after a power failure disabled safety equipment last July 22. About 500 Cloverleaf residents fled their homes and five sought hospital treatment.

On Dec. 18, an alarming odor crept across large areas of Houston, some far from industries. More than 100 people complained about a natural gas leak, but that was ruled out. Officials then unsuccessfully tried to track the odor to plants that make chemicals — especially the one added to natural gas to give it a distinctive smell.

Companies take very different approaches in reporting chemical leaks such as these, which can create problems for environmental officials trying to learn more about toxic chemicals going into the air.

In the July incident, an employee of SDS Biotech Corp. was on the phone to environmental officials six minutes after the accidental release began. Written reports followed, and new backup equipment was installed, including an emergency generator.

But in December, no plants in the Houston Ship Channel area — where city investigators thought the mysterious odor came from — reported or admitted to a problem that could have produced it. Officials were left scratching their heads, without a clue to help prevent a repeat of the incident.

Between the extremes of exhaustive notification and none at all, companies often make reports about unintended releases that fail to include basic information such as the pollutants involved and their amount.

"We're really at the mercy of the companies — who's there, what they can report, how well they're reporting — to try to get a handle on what the quantity of that might be," said James Gise, air quality data chief for the Texas Air Control Board.

Computer summaries of the more than 12,000 such reports since 1980 in Harris, Brazoria, Galveston, Jefferson and Orange counties reveal they ranged from episodes in which thousands of pounds of highly toxic or cancer-causing substances escaped to "pinhole leaks" to maintenance operations with no release expected.

Environmental officials use the general term "plant upsets" for this broad variety of incidents, which represent only one of the three major ways that pollutants get into the air from industries:

- "Normal" or "routine" releases from vents or stacks that direct emissions to the air under controlled conditions. Permits usually allow maximum average releases each year.
- "Fugitive emissions" — fumes from leaky valves, pumps and pipe connections, storage tanks and other sources.
- "Upset conditions" — any major, unintended situation in which air pollutants can or do escape.

The most common cause of upsets is too much pressure within a vessel, said TACB enforcement chief Jim Myers, but the reasons for that can vary across a broad range of mechanical problems and human errors — someone turns the wrong valve, an instrument malfunctions, a chemical reaction goes out of control.

After too much pressure builds up, chemical gases may be vented directly to the air through devices like safety relief valves or can be routed to flares, incinerators or neutralizers to reduce or prevent any from escaping. Those systems operate better on some occasions than on others — in major power failures, some can stop working altogether, records show.

Hampered by a lack of funds, TACB officials say they could not afford a full-time employee to put summaries of those incidents into their computer until late 1984 so they could get a better overall idea of what was happening. Now, all reports since 1980 are in the computer and others are being stored as they come in.

Quarterly summaries of the reports are being sent to each TACB region to provide leads on plants that may have continuing problems, said Bob Love, an agency official. And new scrutiny will be given to large releases of toxic chemicals, he said, so enforcement and corrective action can be taken.

Officials concede, however, that some companies' lack of candor may weaken the effort. Eli Bell, who becomes TACB's executive director in March, said the agency will use its new enforcement powers to crack down on any company it discovers did not make a required report.

The Air Control Board is also asking companies to list individual toxic chemicals when they update their inventories of routine releases. Love said, but "they're reticent to give us the information if it's going to reflect adversely on the company."

TACB officials said their staff is not big enough to pursue that information as aggressively as they would like. And the problem is further complicated because of technical problems in measuring some substances at very low levels.

West Virginia officials believe they were the first in the country to require companies to provide comprehensive inventories of toxic chemicals they release to the air in normal operations, in addition to general information about the broad group of "volatile organic compounds" that includes many of them, said Carl Beard, that state's air pollution control director.

Some company officials said privately they discovered toxic chemicals were escaping from their plants in releases that they had no idea were occurring, Beard said.

This year, Texas officials also will make all companies start regular programs to detect the small, but sometimes numerous "fugitive" leaks that can come from any of the hundreds of valves and pipe connections in a typical plant.

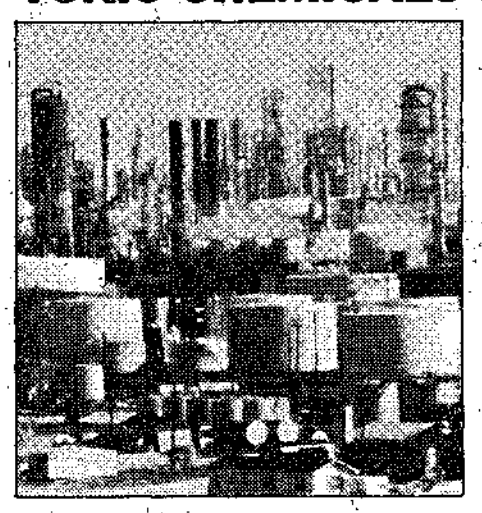
The cumulative effect of these small leaks became more obvious as plants installed new equipment to reduce larger routine releases, said Bill Smalling of TACB's Houston office.

— BILL DAWSON

Carlos Antonio Rios / Chronicle

Safety flares at plants destroy escaping chemicals as a safety measure, but sometimes release partly-burned pollutants as smoke.

TOXIC CHEMICALS IN THE AIR



The House Health and Environment Subcommittee asked major chemical companies last year to report on toxic chemicals they release to the air. The list below includes amounts of 31 of 45 substances that responding companies said they released or had permits to release in Harris, Galveston, Brazoria, Jefferson and Orange counties. Totals were given as 1984 or annual volumes.

The list does not reflect all Houston-area releases of toxic pollutants. For example, about 40 companies in the five counties — many of them not chemical manufacturers — have state permits to release benzene, which the Environmental Protection Agency says is a known human carcinogen.

Some companies told the subcommittee releases were being substantially reduced. Exxon reported large reductions in all emissions at its Baytown chemical plant. B.F. Goodrich said there would be no emissions of ethylene dichloride at La Porte and 1.9 tons of butadiene released at Port Neches last year. Shell said benzene emissions would be cut almost in half in 1985. W.R. Grace said formaldehyde releases at Deer Park would be reduced to less than 0.4 tons in 1985.

(1) Known human carcinogen, according to EPA.

(2) Probable human carcinogen, according to EPA.

(3) Some evidence of cancer-causing ability, according to EPA.

(4) Carcinogen, according to National Institute of Occupational Safety and Health.

(5) Chemical that can kill or injure if accidentally released to the air in large enough amounts, *according to EPA.*

ACROLEIN (5)
11.47 total tons released

Company	Plant location	Tons released
Monsanto	Alvin	1.8
Monsanto	Texas City	3.6
Rohm and Haas	Deer Park	6.07

ACRYLONITRILE (2) (5)
206.22 total tons released

Company	Plant location	Tons released
Du Pont	Beaumont	20.22
Goodyear Tire & Rubber	Houston	6
Monsanto	Alvin	120
Monsanto	Texas City	60

AMMONIA (5)
1,959.97 to 1960.07 total tons released

Company	Plant location	Tons released
Du Pont	Sabine River	1,919.2
Dow Chemical	Freeport	less than 0.1
Goodyear Tire & Rubber	Houston	6.2
Monsanto	Alvin	18.3
Monsanto	Texas City	9.4
Rohm and Haas	Deer Park	6.87

ANILINE (5)

Company	Plant location	Tons released
Du Pont	Beaumont	16.93

BENZENE (1)
553 total tons released

Company	Plant location	Tons released
Dow Chemical	Freeport	7.9
Exxon Chemical	Baytown Olefins	28
Exxon Chemical	Baytown Chemical	10
Goodyear Tire & Rubber	Bayport	0.1
Shell Chemical	Deer Park	507

BUTADIENE (2) (5)
113.3 total tons released

Company	Plant location	Tons released
B.F. Goodrich	Port Neches	11.7
Denka Chemical	Houston	1.6
Goodyear Tire & Rubber	Houston	100

CARBON TETRACHLORIDE (2)

Company	Plant location	Tons released
Dow Chemical	Freeport	37.3

CHLORINE (5)
391.761 total tons released

Company	Plant location	Tons released
ARCO Chemical	Port Arthur	0.1
Denka Chemical	Houston	unmeasured
Du Pont	Beaumont	0.66
Dow Chemical	Freeport	340
Shell Chemical	Deer Park	51
Velsicol Chemical	Beaumont	0.001

CHLOROFORM (2) (5)
83.13 to 88 total tons released

Company	Plant location	Tons released
Du Pont	Beaumont	83.13
Allied Corp.	Orange	less than 4.87

CHLOROPRENE (4)

Company	Plant location	Tons released
Denka Chemical	Houston	50

EPICHLOROHYDRIN (2) (5)

Company	Plant location	Tons released
Shell Chemical	Deer Park	16.4

ETHYLENE DICHLORIDE (2)
30.7 to 30.8 total tons released

Company	Plant location	Tons released
B.F. Goodrich	La Porte	12
ARCO Chemical	Port Arthur	9
[illegible]	[illegible]	less than 0.1

FORMALDEHYDE (3) (5)
10 to 14.8 total tons released

Company	Plant location	Tons released
Exxon Chemical	Houston Chemical	0.5
W.R. Grace & Co.	Deer Park	less than 4.8
Monsanto	Alvin	9.5

HYDROCHLORIC ACID (5)
0.43 total tons released (Hydrogen chloride in water solution)

Company	Plant location	Tons released
Exxon Chemical	Houston Chemical	0.03
Mobil	Beaumont Chem. Specialties	0.4

HYDRODGEN CHLORIDE (5)
6.21 to 6.31 total tons released

Company	Plant location	Tons released
Du Pont	Beaumont	4.9
Du Pont	Sabine River	0.01
Dow Chemical	Freeport	less than 0.1
Monsanto	Texas City	1.3

HYDROGEN CYANIDE (5)
39.89 total tons released

Company	Plant location	Tons released
Du Pont	Beaumont	0.3
Monsanto	Alvin	19.8
Monsanto	Texas City	12.9
Rohm and Haas	Deer Park	6.89

HYDROGEN FLUORIDE (5)

Company	Plant location	Tons released
Monsanto	Alvin	0.4

HYDROGEN SULFIDE (5)

Company	Plant location	Tons released
Du Pont	Beaumont	0.0009

METHYLENE CHLORIDE (2)

Company	Plant location	Tons released
Monsanto	Alvin	130

METHYL ISOCYANATE (5)

Company	Plant location	Tons released
Velsicol Chemical	Bayport	less than 0.2

METHYL MERCAPTAN (5)
1.41 total tons released

Company	Plant location	Tons released
Du Pont	La Porte	0.01
Monsanto	Alvin	1.4

NITRIC OXIDE (5)

Company	Plant location	Tons released
Denka Chemical	Houston	3.8

PERCHLOROETHYLENE (2)

Company	Plant location	Tons released
Dow Chemical	Freeport	36.8

PHENOL (5)
22.57 total tons released

Company	Plant location	Tons released
Monsanto	Alvin	11.1
Monsanto	Texas City	0.2
Rohm and Haas	Deer Park	0.27
Shell Chemical	Deer Park	11

PHOSGENE (5)

Company	Plant location	Tons released
Velsicol Chemical	Bayport	less than 0.2

PROPYLENE OXIDE (3) (5)
41,458 total tons released

Company	Plant location	Tons released
ARCO Chemical	Bayport	35
ARCO Chemical	Channelview	1
Exxon Chemical	Houston Chemical	5.4
Rohm and Haas	Bayport	0.058

STYRENE (3)

Company	Plant location	Tons released
Goodyear Tire & Rubber	Houston	50

SULFURIC ACID (5)
8 total tons released

ACRYLONITRILE (2) (5)
206.22 total tons released

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Dow Chemical	Freeport	less than 0.1
Shell Chemical	Deer Park	0.1
Velsicol Chemical	Beaumont	9.6

ETHYLENE OXIDE (2) (5)
7.224 total tons released

Exxon Chemical	Houston Chemical	6.4
Rohm and Haas	Bayport	0.044
Rohm and Haas	Deer Park	0.78

HYDROCHLORIC ACID (5)
0.43 total tons released (Hydrogen chloride in water solution)

Exxon Chemical	Houston Chemical	0.03
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STYRENE (3)

Goodyear Tire & Rubber	Houston	50

SULFURIC ACID (5)
8 total tons released

Du Pont	La Porte	7
Goodyear Tire & Rubber	Houston	1

TRICHLOROETHYLENE (2)

Dow Chemical	Freeport	less than 0.1

VINYLIDENE CHLORIDE (3)

Dow Chemical	Freeport	0.9

EPA says it intends to regulate butadiene, carbon tetrachloride, chloroform, ethylene dichloride, ethylene oxide, methylene chloride, perchloroethylene and trichloroethylene. The Natural Resources Defense Council is suing to speed up the EPA effort. The agency says it will not regulate acrylonitrile, chloroprene, epichlorohydrin and vynilidene chloride.

Ronald L. Goins/Chronicle

WHAT IS CAER?

CAER stands for Community Awareness and Emergency Response. The program is sponsored by the Chemical Manufacturers Association nationwide, the Texas Chemical Council in Texas, and in the Brazosport area by your local chemical industries, emergency service agencies and local government officials.

Which companies and local agencies are participating in the CAER program?

All the major companies involved in the production of chemicals including Dow, BASF (formerly Badische), Nalco, Shintech, Schenectedy, Rhone-Poulenc, Gulf Chemical and Metallurgical; and others who are related through storage or pipelines such as Amoco, Phillips Petroleum, Monsanto and Seminole Pipeline.

The local emergency service agencies include the Sheriff's Department, all the local police and fire departments, the Department of Public Safety, the U.S. Coast Guard, Brazosport Memorial Hospital, and Angleton-Danbury Hospital. In addition, several local government officials and public representatives have been involved in the CAER planning.

What happens if there is a release?

If a major release is suspected, the Industrial Security Department at Dow's Texas Operations is notified via a common radio frequency and network that has been established and is on line 24-hours a day, seven days a week. Dow's Industrial Security personnel will immediately notify the Sheriff's Department through a "hot line" which rings in the Sheriff's office as soon as the receiver at Dow is picked up. All the local police departments now have the capability to monitor this system. This, too, is manned around the clock.

The Sheriff's Department can then ask the appropriate agency to take whatever action is needed according to the information they receive. For example, roadblocks may be critical to keep traffic from an affected area. Each of the companies and all police vehicles have identical maps designating roadblock points, eliminating confusion as to where the police cars should go.

As all this is happening, of course, the emergency response teams of the company in question are working to correct the situation.

In short, if a situation occurs which could endanger the community, the companies and the emergency service agencies are well-prepared to respond in an appropriate manner.

What should I do in the event of a major chemical release?

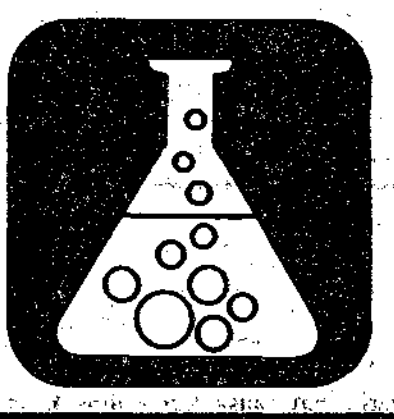
The probability of a major chemical release that would affect the community is remote. It never hurts, however, to have a family emergency plan addressing any emergency that could affect your family—including fire, flood, hurricane or chemical releases. The information found on the back page is designed to help you in your preparation.

What should I do if I'm in an "affected area"?

You should be prepared to get yourself and your family out of the area if instructed to do so by the appropriate local authorities—the police or fire departments. If you are close enough to the release to determine the direction and speed of the release you might also choose to leave the area.

You should also be prepared to take adequate steps to protect yourself and your family if evacuation is not possible or necessary. Studies have shown that even poorly sealed buildings give protection from a serious amount of gas entering the building. Those results would indicate that if you are outside, you should go in your house or nearby building, or get in your automobile. Once inside, close off all outside ventilation such as the air conditioner, furnace or windows. Stay inside and wait for the cloud to pass.

If you do feel the gas is entering the building and you are in danger, a wet cloth or towel over your nose and mouth will act as a filter and offer some protection.



What are the types of chemicals about which I should be most concerned?

Hazardous chemicals are gases, solids and liquids used in the production of many items and necessities we use in our everyday lives. Gases are of most concern to the public. These include chemicals such as chlorine (used as a purifier in drinking water and bleach); vinyl chloride and phosgene (raw materials used for plastics to be used in everything from automobile production to food packaging); and ammonia (used in many household cleaners).

The hazardous characteristics of these chemicals range from mild irritants and odors to fire, explosive or corrosive hazards to extreme health hazards from large or prolonged exposures. There are others that pose no health threat at all, but merely have a strong odor associated with them.

These materials are manufactured, transported and stored in containers designed specifically for this purpose and built to withstand damage encountered in most emergency situations. Every precaution is taken to protect the health of our employees, those who handle or use our products, the community, and the surrounding environment.

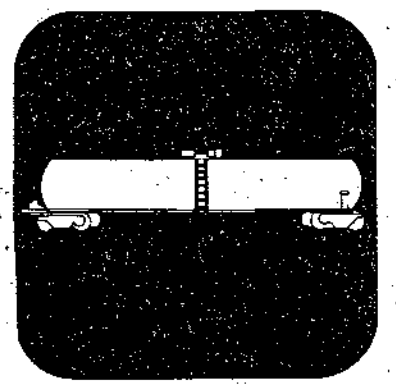
What if I'm outside and see a "gas cloud" coming toward me?

If you are outside and can't get into a building or car, move crosswind. In other words, move so the wind is blowing from your left to your right, or vice versa, but *not* so the wind is blowing into your face or from behind you. Moving in this manner will most quickly get you away from the highest concentration of the gas.

Do not drive or walk into any "cloud." Gas clouds, especially chlorine and ammonia, can change the fuel-to-air ratio in your vehicle's carburetor, and can cause the engine to stall, leaving you in the midst of a possibly lethal gas release. Driving into an explosive gas release could be equally dangerous. Sparks from your vehicle could ignite the release, causing an explosion and fire.

How far should I go if I evacuate?

A distance of 2500 feet (about one-half mile or nine city blocks) is considered a *minimum* safe distance. Depending on the size of the release and the chemical involved, these distances will vary. Again, the local authorities in charge will be in the best position to make this decision.



How can I identify vehicles carrying hazardous materials?

All rail cars, trucks and packages containing hazardous materials are required by law to display colored, diamond-shaped placards with identification numbers signifying the chemical being carried.

Chemicals are classified as follows:

Class 1 — Explosives — Brown placard

Class 2 — Gases — White placard with skull or red placard with flame

Class 3 — Flammable and Combustible liquids — Red placard

Class 4 — Flammable solids — Red & white striped placard

Class 5 — Oxidizers and Organic peroxides — Yellow placard

Class 6 — Poisons and poison gases — White placard with skull

Class 7 — Radioactive material — Black & yellow placard

Class 8 — Corrosives — Black & white placard

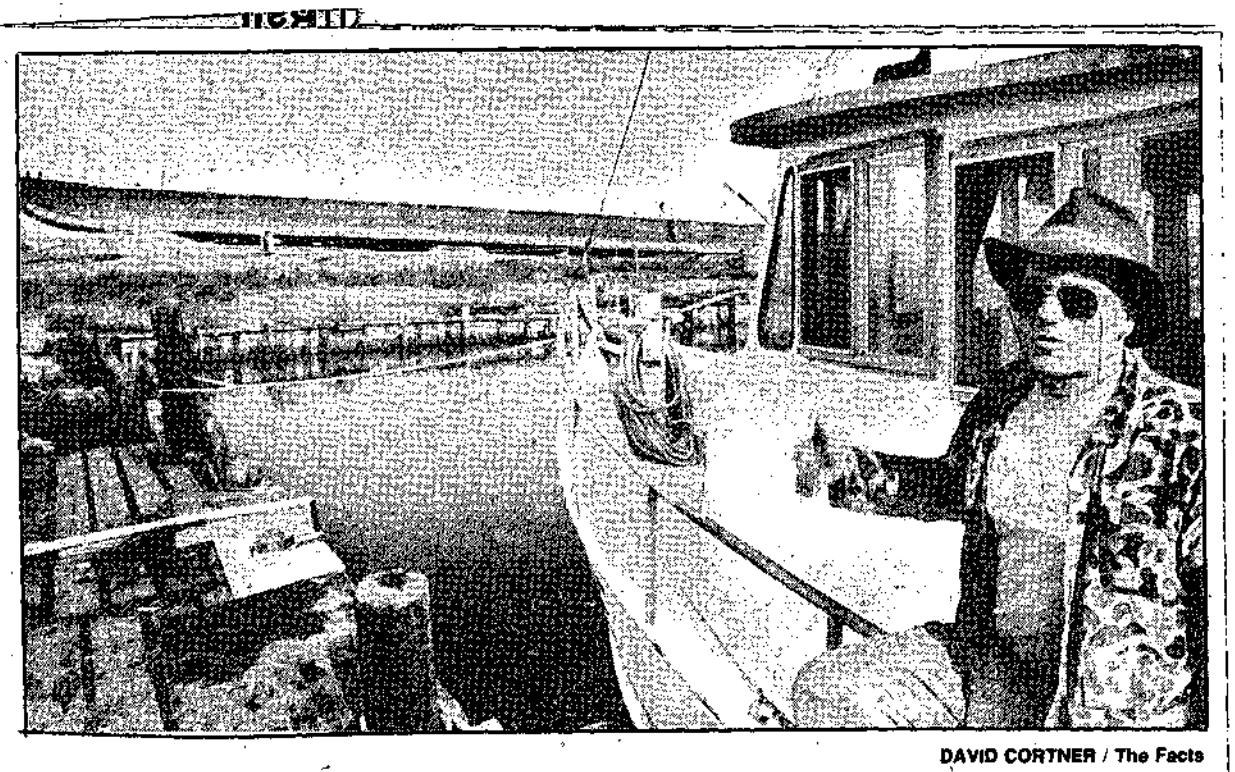
The color of the placard will indicate the classification of the chemical. A picture at the top of the diamond indicates any danger posed by the chemical (for example, a picture of a fire indicates a fire hazard). The number in the center of the placard indicates the exact chemical, and is of significance to the people who are responding to the emergency.

What should I do if I see a dangerous situation such as a leaking truck?

If you see any situation which you think is dangerous, you should call the local authorities. In Brazoria County the Sheriff's Department is the focal point for the coordination of any emergency response. Call the Brazoria County Sheriff's Department at 1-800-392-4321, and give them as much information as possible.

If you are outside of Brazoria County and you see a chemical-related emergency, you can call CHEMTREC at 1-800-424-9300.

FOR MORE INFORMATION ON THE CAER PROGRAM IN BRAZOSPORT CALL 238-CAER (2237).



DAVID CORTNER / The Facts

Shrimper Danny Marches says the emissions from Hercules Offshore Co. next door often give him headaches and nasal problems. Hercules officials say they'll listen to complaints.

Bridge Harbor complaints

Residents dislike industrial neighbor

See related story, Page 11A

By KEN CHAMBERS
The Brazosport Facts

FREEPORT — On bad days, residents on the east side of the Bridge Harbor subdivision near Hercules Offshore Co. complain of headaches, nausea and running noses.

"When they open a barge over there where chemicals have been you get watery eyes and a running nose. The kids get symptoms like they were coming down with a bad cold," Bridge Harbor resident B.K. Schoggins said.

Schoggins and other residents complain that the chemicals, sandblasting and noise associated with the Hercules' barge maintenance facility are making life miserable, even hazardous. But they say they have received little response from the city and state regulatory agencies.

Eleven residents signed a letter written by resident Bob Casale that outlines their complaints against Hercules. The letter was sent to Hercules, the Texas Air Control Board, city of Freeport, U.S. Coast Guard, U.S. Environmental Protection Agency, U.S. Rep. Tom DeLay, state Sen. J.E. "Buster" Brown, state Rep. John Willy and the Texas Attorney General's Office.

CASALE SAYS noise from Hercules sometimes keeps him up at night. The facility, which services barges on the Intracoastal Waterway, is about 500 feet from his house.

"The screeching from the sandblasting is the most unbelievably high-pitched noise you have ever heard," he said.

A loudspeaker and other parts of the operation are also loud enough to disturb the residents, he said. Casale made it clear that he thinks the worst problem posed by the plant comes from the contaminants it puts into the air.

"We have experienced sick conditions such as watery eyes, tightness of the chest, headaches and nasal congestion," Casale wrote in the letter. "At one time the chemicals from your operation

See BARGE, Page 11A

Barge

Continued from Page 1

killed all the leaves from the trees on the east side throughout the whole subdivision."

Casale says Hercules releases benzene and styrene, among other chemicals, when it opens the chemical barges for maintenance. Benzene is listed in the Condensed Chemical Dictionary as toxic by ingestion, inhalation and skin absorption. Styrene is listed as moderately toxic by ingestion and inhalation.

THE OVERSPRAY from Hercules' sandblasting operations is unhealthy as well as damaging to resident's property, Casale said.

"Any time they sandblast they have respirators on," Casale said, as he motioned to a Hercules' employee wearing a protective mask as he worked on a dry-docked barge. "But their debris is blowing on us and our houses.

"We are unable to open our windows. Our automobiles have been damaged and covered with the over-spray. Our downstairs patio is always filled with particles of the sandblasting. When we attempt to breathe outdoors, our lungs, throat and nose are filled with the particles," he said in the letter.

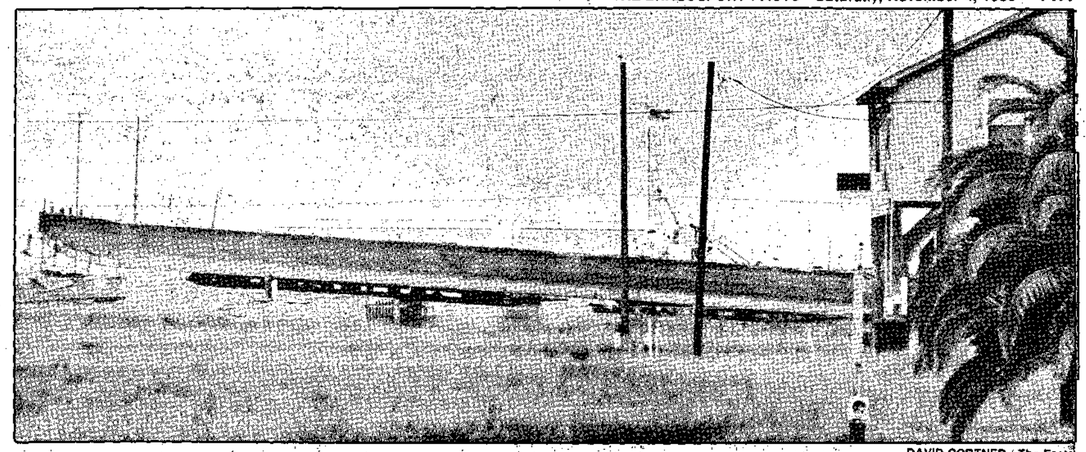
Complaints by Casale and other residents led to a citation for over-spray violations by the Texas Air Control Board in August, said Mary Knotts, environmental quality specialist for the board. Hercules must correct the problem to avoid further action, Knotts said. Air Control Board personnel are also planning increased sampling and surveillance of the operation, she said.

BUT CASALE said they are skeptical the citation will help and they still face numerous other problems with little assistance from government officials. He charges that city officials ignored residents' pleas for help during a meeting in April to rezone property in the area.

"After hearing from approximately 30 persons opposing this zone change, the city ignored the complaints and went on to rezone the land from light manufacturing to water-front heavy," he wrote in the letter.

City Code Enforcement Officer Robbie Blair said the city was obligated to conform zoning in the area to its existing use. Fish Engineering ran an operation similar to Hercules and on the same site before the city annexed the subdivision in 1980, he said.

The city is working with the Texas Air Control Board to investigate air quality complaints against Hercules. But noise is the only facet of the problem that the city can address, Blair said.



DAVID CORTNER / The Facts

A barge pulled up in dry dock at the Hercules Offshore Co. in Bridge Harbor is visible throughout the Freeport subdivision. Residents say the barge maintenance facility is a hazard to their health, while Hercules warns residents not to bother customers.

"THE ONLY THING I know of right now that we have an ordinance for and is enforceable is noise. We definitely have a potential problem out there. Our problem is that every time I've investigated a complaint they have been shut down."

Knotts said Fish and Hercules have not been required to have permits to regulate emissions from the facility because Fish was in operation before the authorization of the Clean Air Act in 1972.

"All business in operation before (the Clean Air Act was authorized) were grandfathered in," she said. "If they have not modified the facility or increased emissions they don't need a permit."

She said Hercules is still required to operate under the guidelines established by the Clean Air Act, but the facility has never received the intensive review that would have been required for a permit.

Casale said he is making one last effort to work through the problems with the proper agencies.

"AS A LAST resort we will seek legal remedies in court," he said.

Schroggins said he is considering moving from the subdivision because he does not want to continue risking the health of his young children while waiting for the problem to be resolved.

"Some people say we will get used to it. If you keep a thorn in your side long enough you will get used to it. I might be able to, but the kids will never get used to it."

Phillips complex plans to resume some production

By KENNETH R. PYBUS
The Brazosport Facts

Production of plastic resins from Phillips 66 Co. operations not seriously damaged in the Oct. 23 explosion and fire at the Houston Chemical Complex in Pasadena will soon resume, the company announced Friday.

Startup production procedures have begun at the complex's K-resin plant and similar measures at the polypropylene plant are scheduled to begin the middle of next week.

Phillips also has announced its intention to continue polyethylene resin production at the Pasadena complex and will provide a more specific rebuilding schedule within the next few days.

Nineteen fatalities have been confirmed as a result of the accident, including a hospitalized contract worker who died earlier this week. Search teams are continuing to comb accessible areas for four Phillips employees who remain missing.

Also, a rappeling search team has covered the upper levels of the 200-foot-high plant's five reactors.

Phillips has been working with area residents and businesses since the day of the explosion to settle the 1,707 claims filed in connection with the accident.

Information released Friday shows the company has paid claimants $445,000 representing full or partial payment of 862 claims.

Harris County Fire Marshal investigators and Phillips structural experts have concluded that demolition of some structures is necessary to permit safe completion of the search for missing employees.

Unstable damaged steel and concrete structures made the decision necessary, according to information released Friday.

Demolition in some areas is planned to begin Monday.

Four Phillips employees and one contract worker remain hospitalized, primarily from burns, and all are listed in good to guarded condition.

Counseling services for all employees of the complex and their families is continuing at a company-sponsored counseling centers located at Humana Hospital Southmore and at the Houston Chemical Complex.

Dow, union leaders okay tentative pact

Membership votes Wednesday

Dow Chemical Co. union leaders and management, working to negotiate a long-term contract into 1993, announced Friday a tentative agreement has been reached that will be sent back to union members to vote on next week.

Reading of the proposed contract for members of the operators union will be conducted at the Operating Engineers Union Hall Monday at 7 a.m., noon and 4:30 p.m.

Voting will take place at the Union Hall Wednesday from 7 a.m. to 10 p.m.

Members of the pipefitters and the Personnel Resources Group Metal Trades unions can hear readings of the contract Monday at 1 p.m. and 5 p.m., and metal trade union workers will have another reading available at 1 p.m. Tuesday.

Boilermakers union members can hear readings at 11:30 a.m. Monday and 5 p.m. Tuesday; the insulators union will have a reading Monday at 7 p.m.; and the machinists union readings will be at 1 p.m. and 7 p.m. Tuesday.

All readings for those unions will be conducted at the Richwood Pipefitters Union Hall, and the voting will take place there as well Wednesday from noon until 10 p.m.

The unions turned down a long-term contract offered by Dow Chemical last month.

Hercules attorney warns residents about making 'false accusations'

FREEPORT — Hercules Offshore Co. officials say they are willing to listen to the complaints of Bridge Harbor residents, but an attorney for the company warned residents not to complain to Hercules' customers.

"Should you persist in making false accusations to Hercules' customers, Hercules may have no choice but to seek its legal remedies against you, including seeking recompense for any business that Hercules might lose because of your false accusations," Houston attorney John F. Waldo wrote in a certified letter dated Oct. 18 to Bridge Harbor residents Bob and Stella Casale.

Waldo said the Casales were mistaken in blaming all of the problems on Hercules.

"On Sunday, Oct. 15, you apparently noticed that a Dow Chemical Co. barge was in Hercules' yard for cleaning and you complained to Dow about the odors. That barge contained caustic (soda), which is odorless. No one doubts that there was an odor on Sunday — Hercules personnel also noticed it, so the source was obviously farther upwind.

"THIS IS ONLY the most recent specific instance in which you have unjustly blamed Hercules," Waldo said.

He said that because Bridge Harbor is near the Intracoastal Waterway, the residents there can expect to encounter chemical releases from the vessels traveling nearby.

"You have chosen to live on a heavily traveled industrial waterway. While it may not be legal to vent barges moving along the Intracoastal, you know as well as we do that it does happen.

"The frequency with which you complain about odors that do not correspond to any activity in the Hercules yard, and particularly your complaints about odors after midnight when Hercules does not operate, leads us to suspect that very many of the odors you complain about have nothing to do with the Hercules' operation."

He denied that the company creates noise problems and said Hercules does not operate after hours as Bridge Harbor residents have claimed.

WALDO SAID Hercules "has voluntarily instituted programs and undertaken expenses to minimize any impact its operations might have on your property. Despite that, there have been minor problems in the past and there may again be in the future."

> *We're trying to be good neighbors and we're trying to provide jobs and make a few bucks too.*
>
> **— Raymond Ellison**
> **Hercules' President**

To work in solving the problems "we welcome your direct communication concerning any problems you believe may exist. Should you wish not to communicate directly with Hercules, you do of course have the right to communicate directly with regulatory authorities and Hercules will cooperate with them. Your communications with Hercules' customers, however, is another matter."

"Again, Hercules wants to be a good neighbor. At the same time, though, Hercules is not going to abandon its business because of unwarranted harassment and intends to protect itself from any false accusations of improper operations."

WHEN CONTACTED last week Waldo declined to comment further and asked that any questions be directed to Hercules' President Raymond Ellison. Ellison declined to address the residents' complaints, but defended Hercules' operations.

"We're trying to be good neighbors and we're trying to provide jobs and make a few bucks too," he said. "We're certainly trying to live up to the zoning and permit requirements."

He said the City Council's recent decision to extend industrial zoning in the area is a good indication of the city's support and approval for the operation.

"Back in April we had a zoning meeting where some of the residents voiced their opinions before the city fathers, as they are certainly entitled to do. The city further zoned the area for industrial use."

By KEN CHAMBERS

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Vol. 84, No. 309
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The Facts

Covering Brazoria County – Where Texas Began

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JANUARY 10, 1998
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Hercules facing 22 criminal charges, $3.62 million in fines

By JASON SPENCER
The Facts

ANGLETON — Freeport-based Hercules Marine Services Corp. faces 22 criminal charges and a maximum $3.62 million fines for allegedly lying to conceal its practice of unlawfully releasing toxic waste.

The Brazoria County Grand Jury indicted the company Thursday and an as yet unidentified individual each on 10 misdemeanor counts of fraud in violation of the Texas Clean Air Act and 11 misdemeanor counts of violation of the Texas Clean Air Act. Hercules and the individual also each face single charges of tampering with a governmental record, which is a state jail felony.

The individual charged with the 22 crimes faces a fine of up to $1.56 million and a possible jail sentence.

Arrest warrants for the company's designated agent and the unidentified individual had not been served as of press time Friday. The name of the individual indicted in the case is expected to be released after the warrant is served.

Hercules' attorney Lloyd Stansberry, who could not be reached for comment Friday, has said he believes the barge cleaning company will be absolved of all charges.

The indictments come on the heels of a

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Hercules

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Texas Natural Resource Conservation Commission investigation that determined the company illegally cleaned a toxic chemical called cyclohexane from barges operated by the BASF Corp. from Nov. 30, 1996 until April 27, 1997. Because Hercules failed to use the proper vapor recovery system to remove the ozone-depleting chemical from the barges, the toxic chemical escaped into the atmosphere, the TNRCC alleges.

Besides improperly cleaning the barges, company official are accused of devising an elaborate scheme to hide the fact. The 10-count fraud indictment alleges the company would claim on barge cleaning reports workers removed only normal butenol from the vessels instead of cyclohexane.

Along with the pending criminal charges, Hercules is embroiled in a two-year-old legal battle with Bridge Harbor resident Bobby Jo Casale. The company filed the initial lawsuit against Casale alleging Casale's accusations Hercules was polluting the local environment and the Intracoastal Waterway cost the company millions of dollars in business. Casale in turn filed a counter lawsuit against the company seeking damages for the effects Hercules' alleged toxic dumping had on Casale's health and waterfront property.

Hercules and the unidentified individual defendant will face the misdemeanor charges in county courts, while the state jail felony charges are under state district court jurisdiction. The cases are expected to be prosecuted by a TNRCC attorney.

Got a news tip?
Call The Facts at 265-7411